

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of measuring a thermal conductivity of an object, comprising:

positioning a heat source between and in contact with a surface of the object and a surface of a heat resistant material;

aligning the object, the heat source, and the heat resistant material along a substantially vertical axis;

causing the heat to flow along a heat flow path from the heat source into the object and an interior of the heat resistant material;

measuring a temperature of at least two spaced apart locations aligned substantially parallel to the vertical axis, the locations being against or inside the heat resistant material, within a short period of time substantially less than one hour after first causing the heat to flow after a predetermined duration before therein reaching steady state; and

calculating the thermal conductivity of the object from the temperature difference between the spaced apart locations as measured within the short period of time.

2. (Previously Presented) The method of claim 1 wherein the heat source has a central area and an auxiliary area surrounding the central area.

3. (Previously Presented) The method of claim 1 wherein an externally exposed surface of the heat resistant material is covered with a cover member.

4. (Currently Amended) An instrument for measuring the thermal conductivity of an object to be measured, comprising:

a heat resistant material having a heat resistance;

a temperature difference measuring unit capable of measuring a temperature difference between at least two locations spaced apart about or inside the heat resistant material;

a heat generating unit configured to be placed vertically between the surface of the heat resistant material and a surface of the object;

wherein the heat generating unit is configured to generate ~~generates~~ heat between the surface of the object and the surface of the heat resistant material, causing heat to flow from said surfaces of the object and the heat resistant material into an interior of the heat resistant material;

the measurement temperature difference measuring unit is configured to measure ~~of a temperature difference of the heat resistant material is initiated and is terminated within a short period of time substantially less than one hour after heat is first generated after a predetermined duration before reaching steady state;~~ and

the thermal conductivity of the object to be measured is obtained from a temperature difference, measured within the short period of time, between at least two locations positioned vertically along the heat flow on the surface of or internal to the heat resistant material.

5. (Previously Presented) The instrument of claim 4 wherein the heat generating unit comprises a main heat generating section for generating heat in a central area and an auxiliary heat generating section for generating heat in an area surrounding the main heat generating section.

6. (Currently Amended) A method of determining a thermal conductivity of a heat insulating material, comprising an inspection step in which heat is generated between the heat insulating material and a heat resistant material and caused to flow through the heat insulating material and the heat resistant material, and a measurement step in which a

temperature difference of the heat resistant material is initiated and is terminated after a ~~predetermined duration before reaching steady state~~ period of time substantially less than one hour, and the thermal conductivity of the heat insulating material is obtained from a temperature difference between at least two points of the heat resistant material.

7. (Previously Presented) The method of claim 6 wherein a heat generation area is divided into a central area and an area surrounding the central area.

8. (Currently Amended) A method of manufacturing a heat insulating material with thermal conductivity pre-measured, comprising steps of:

generating heat between surfaces of the object and a heat resistant material; causing heat to flow at least substantially vertically from said surfaces of the object and the heat resistant material into an interior of the heat resistant material;

measuring a temperature of at least two spaced apart locations aligned substantially parallel to the vertical axis, the location being against or inside the heat resistant material, within a short period of time after heat is initially generated ~~a predetermined duration before therein reaching steady state~~; and

calculating the thermal conductivity of the object from the temperature difference, as measured within the short period, between the spaced apart locations aligned substantially parallel to the vertical axis, the location being against or inside the heat resistant material.

9. (Previously Presented) The method of claim 1 wherein the object is a heat insulating material.

10. (Previously Presented) The method of claim 1 wherein the object is a vacuum insulation material.

11. (Previously Presented) The method of claim 1, further comprising steps of predetermining a calibration curve showing a relation between the thermal conductivity and the

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temperature difference and applying the measured temperature difference to said calibration curve to determine the heat conductivity of the object.